

- a DC offset generator operable to add a DC offset to both the 2-level mapped signal and the 8-level mapped signal to produce a 2-level VSB modulated signal and an 8-level VSB modulated signal, respectively; and

- a transmitter operable to transmit the 2-level VSB modulated signal and the 8-level VSB modulated signal;

said receiving apparatus comprising:

- a demodulator operable to demodulate the 2-level VSB modulated signal and the 8-level VSB modulated signal to the first data stream and the second data stream, respectively.

50. A signal transmission apparatus comprising:

- a mapper operable to map a first data stream to a 2-level mapped signal having two levels separated by a first amount, and to map a second data stream to an 8-level mapped signal having eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- a DC offset generator operable to add a DC offset to both the 2-level mapped signal and the 8-level mapped signal to produce a 2-level VSB modulated signal and an 8-level VSB modulated signal, respectively; and

- a transmitter operable to transmit the 2-level VSB modulated signal and the 8-level VSB modulated signal.

51. A signal receiving apparatus comprising:

- a receiver operable to receive a 2-level VSB modulated signal, having information of a first data stream, and an 8-level VSB modulated signal, having information of a second data stream, wherein the 2-level VSB modulated signal has two levels separated by a first amount and includes a carrier produced by a DC offset, the 8-level VSB modulated signal has eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount, and includes the carrier produced by the DC offset; and

- a demodulator operable to demodulate the 2-level VSB modulated signal to the first data stream and the 8-level VSB modulated signal to the second data stream.

52. A signal receiving apparatus according to claim 51, wherein said demodulator is operable to demodulate the 2-level VSB modulated signal and the 8-level VSB modulated signal by using the carrier.

53. A signal receiving apparatus according to claim 52, wherein said demodulator includes a carrier reproducer operable to reproduce the carrier according to a portion of the carrier passed through by the DC offset.

54. A signal transmission and receiving method comprising a transmission method and a receiving method,

said transmission method comprising:

- mapping a first data stream to a 2-level mapped signal having two levels separated by a first amount, and mapping a second data stream to an 8-level mapped signal having eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- adding a DC offset to both the 2-level mapped signal and the 8-level mapped signal to produce a 2-level VSB modulated signal and an 8-level VSB modulated signal, respectively; and

- transmitting the 2-level VSB modulated signal and the 8-level VSB modulated signal;

said receiving method comprising:

- demodulating the 2-level VSB modulated signal and the 8-level VSB modulated signal to the first data stream and the second data stream, respectively.

55. A signal transmission method comprising:

- mapping a first data stream to a 2-level mapped signal having two levels separated by a first amount, and mapping a second data stream to an 8-level mapped signal having eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount;

- adding a DC offset to both the 2-level mapped signal and the 8-level mapped signal to produce a 2-level VSB modulated signal and an 8-level VSB modulated signal, respectively; and  
- transmitting the 2-level VSB modulated signal and the 8-level VSB modulated signals.

56. A signal receiving method comprising:

- receiving a 2-level VSB modulated signal, having information of a first data stream, and an 8-level VSB modulated signal, having information of a second data stream, wherein the 2-level VSB modulated signal has two levels separated by a first amount and includes a carrier produced by a DC offset, the 8-level VSB modulated signal has eight levels, each adjacent two levels of which are separated by a second amount that is less than the first amount, and includes the carrier produced by the DC offset; and

- demodulating the 2-level VSB modulated signal to the first data stream and the 8-level VSB modulated signal to the second data stream.

57. A signal receiving method according to claim 56, wherein said demodulating comprises demodulating the 2-level VSB modulated signal and the 8-level VSB modulated signal by using the carrier.